

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Re application of

YIFAN GONG

Serial No. 09/589,252 (TI-25489.1)

Filed June 7, 2000

For: SOURCE NORMALIZATION TRAINING
FOR HMM MODELING OF SPEECH

Art Unit 2641

Examiner A. Azad

Commissioner for Patents
Washington, D.C. 20231

Sir:

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BRIEF ON APPEAL

REAL PARTY OF INTEREST

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The real party of interest is Texas Instruments Incorporated, a Delaware Corporation with offices at 7839 Churchill Way, Dallas, Texas 75251.

RELATED APPEALS AND INTERFERENCES

There are no known related appeals and/or interferences.

STATUS OF CLAIMS

This is an appeal of Claim 9, the only claim rejected under 35 U.S.C. §102(e). Please charge any costs to Deposit Account 20-0668.

STATUS OF AMENDMENTS

An amendment after final was filed May 3, 2001 canceling Claim 10 and was entered.

SUMMARY OF INVENTION

As pointed out in applicant's specification, the prior art recognition suffers from at least two factors:

- 1.) Mismatch between the environment in which the speech models of the recognizer is trained and the environment the recognizer (together with the trained models) is deployed
- 2.) Flatness of the distribution of speech models as a result of using training data collected from a variety of environments.

Applicant's claimed invention calls for a speech recognizer that comprises a speech signal source representation and a set of transformations. The signal source representation and the set of transformations are jointly determined to reduce the recognition error rate by performing the step of determining a new set of signal source representation and determining new transformation jointly with the new signal source representation. Applicant teaches how to change the representations (in addition to introducing a transformation) for a lower recognition error. The application describes how to jointly determine the signal representation and transformations (Equations 21-26). Fig. 5 illustrates starting with an initial model, performing estimation of intermediate quantities in step 23a, performing re-estimation in step 23b, deriving mean vector in step 23c and in step 23d solving jointly for mean vectors and bias vectors using linear equations 21-26 and then replacing old model parameters for the calculated ones to produce the new model.

ISSUES

Applicant's Claim 9 is rejected under 35 U.S.C. §102(e) as being anticipated by Juang et al. reference, U.S. Patent No. 5,812,972.

GROUPING OF CLAIMS

There is only one claim.

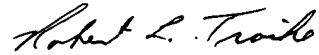
ARGUMENT

Applicant's Claim 9 calls for transforming speech models, i.e. speech signal source representation. Applicant's Claim 9 calls for "said signal source representation and said transformations being jointly determined to reduce the recognition error rate by performing the step of determining a new set of signal source representation and determining new transformations jointly with the new signal source representation. The initial model is changed to the new model as illustrated in applicant's Fig. 5. The speech input signal is not changed in applicant's teaching. The examiner cites Col. 2, lines 35-38 of the Juang et al (U.S. Patent No. 5,812,972) as teaching " a speech signal source representation: a set of transformations" and further teaching "said signal source representation and said set of transformations being jointly determined to reduce the recognition error rate by performing the step of determining a new set of signal source representation and determining new transformation jointly with new signal source representation". This is not taught in the cited Juang et al. reference. The Juang et al. reference, U.S. Patent No. 5,812,972, explicitly states "transforms the input speech signal." See column 2, lines 35-38 which states "the present invention includes a speech analyzer which transforms an input speech signal into a series of feature vectors or an observation sequence." Each feature vector is then provided to a speech recognizer. The reference transforms the input speech and not the speech models or speech signal source representation to reduce the recognition error rate. The Juang et al. reference does not in any way suggest transforming

CONCLUSIONS

For the reasons stated above and since there are no other grounds of rejection, reversal of the final rejection and allowance of the Claim 9 is requested that justice be done in the premises.

Respectfully submitted,



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APPENDIX

The claim on appeal reads as follows:

9.A speech recognizer comprising:

a speech signal source representation;

a set of transformations;

said signal source representation and said set of transformations being jointly determined to reduce the recognition error rate by performing the step of determining a new set of signal source representation and determining new transformations jointly with the new signal source representation.